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A taxonomic study of the genus *Tagasta* Bolivar from China (Orthoptera: Acridoidea: Chrotogonidae)

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Abstract: This paper deals with a taxonomic study of *Tagasta* Bolivar, 1905 from China, with a description of a new species *Tagasta gui* sp. nov. The new species is similar to *T. marginella* (Thunberg, 1815), but the tegmina short, only reaching the base of epiproct in male; lateral lobe of pronotum without white lower margin and hind tarsi baby pink. A key to known species of the genus *Tagasta* from China is given. The type specimens are deposited in the Museum of Hebei University (MHU), China.

Key words: Orthoptera; Acridoidea; Chrotogonidae; *Tagasta* taxonomy; new species; China

The genus *Tagasta* was erected by Bolivar in 1905, which is very similar to *Pseudomorphacris* Carl, 1916, but differs from the latter by: hind-lower angle of lateral lobe of pronotum nearly right angulated; base of wings usually red or rosy; cerci in male not curved upward, usually short conical. Thirteen known species are recorded in the genus *Tagasta* Bolivar, 1905 in Orthoptera Species File Online (Eades *et al.* 2009), among which 6 species are distributed in China.

In the present paper, a taxonomic study of the genus *Tagasta* Bolivar from China is given, including seven species, with description of a new species from Taiwan, China. A key to the seven species is given.

The type specimens are deposited in the Museum of Hebei University (MHU), China.

Genus *Tagasta* Bolivar, 1905

Tagasta Bolivar, 1905, *Bol. R. Soc. Esp. Hist. Nat.*, 5: 111; Willemse, 1930, *Tijdschr. v. Entomologie*, 73: 87; Kevan, 1977, In: Beier ed. Orthopterorum Catalogus. 16: 340; Bi, 1983. *Contrib. Shanghai Inst. Entomol.*, 3: 177, 178; Otte, 1994, Orthoptera Species File, 3: 133; Xia *et al.*, 1994, Fauna Sinica, Insecta 4, (Insecta Orthoptera): 267; Liu JP & Li HC, 1995, In: Liu JP *et al.*, Studies on acridoids of Hainan Island, 33; Jiang & Zheng, 1998, Grasshoppers and Locusts from Guangxi, p. 48.

Type species: *Tagasta hoplosterna* (Stål, 1877) = *Mestra hoplosterna* Stål, 1877.

Key to the species of *Tagasta* Kirby, 1905 from China

1(4) Length of vertex longer than width near the fore margin of eyes. Eyes long oval.
2(3) Tegmina long, extending over the end of abdomen in male; lateral lobe of pronotum with white lower margin and hind tarsi not baby pink ..... **1. *T. marginella* (Thunberg, 1915)**
3(2) Tegmina short, only reaching the base of epiproct in male; lateral lobe of pronotun without white lower margin and hind tarsi baby pink ..... **2. *T. gui* sp. nov.**
4(1) Length of vertex shorter than width or equal to the width of eyes. Eyes short oval.
5(10) Wings painted bright orange-red or rosy. Hind tibia dark blue-green.
6(7) Tegmina and wings long, almost reaching or extending over the end of hind femur .....
..... **3. *T. indica* Bolivar, 1905**
7(6) Tegmina and wings short, far not reaching to the knee of hind femora.
8(9) Lateral lobe of pronotum with white granulars on the fore half of lower margin, tegmina long, extending over the end of abdomen in male, hind tibia with 7 – 8 spines on inner side and hind femur with black spot on the lower kneelobe on inner side ..... **4. *T. yunnana* Bi, 1983**
9(8) Lateral lobe of pronotum without white granulars on the fore half of lower margin, tegmina short, extending over the midpoint of hind femur in male, hind tibia with 9 – 12 spines on inner side and hind femur without black spot on the lower kneelobe on inner side ..... **5. *T. brachyptera* Liang, 1988**

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10(5) Wings painted light red or light yellowish-orange. Hind tibia light blue or light green.
11(12) Body larger in size. Tegmina long, almost reaching the end of hind femora, without small red spots at veins. Eyes larger, short oviform ····· **6. *T. tonkinensis* Bolivar, 1905**
12(11) Body small in size. Tegmina short, far not reaching the end of hind femora, with small red spots at veins. Eyes small, nearly circle ····· **7. *T. ruformaculata* Bi, 1983**

1 *Tagasta marginella* (Thunberg, 1815)

Truxalis marginellus Thunberg, 1815, Mem. Acad. Petersb. v., p. 265; Kirby, 1910, A Synonymic Catalogue Orth. III, p. 330; Willemse, 1928, *Zool. Meded.*, 11: 5, fig.; Kevan, 1963, *Ark. Zool.*, 16: 77, fig.; Haskell, 1982, The Locust and Grasshopper Agricultural Manual, p. 63.

Acridium (*Pygomorpha*) *chloropum* De Haan, 1842, Temminck, Verhandel., Orth. p. 149. n. 3, pl. 23. f. 3.

Atractomorpha marginella Stål, 1873, Recens. Orth. i. p. 13. n. 2.

Mestra marginella Bolivar, 1884, *An. Soc. Espan.*, xiii. pp. 71, 72. 495. n. 4.

Mestra concolor Karsch, 1888, *Ent. Nachr.*, xiv. p. 335. n. 29.

Distribution: China (Guangxi); Thailand, Viet Nam, Cambodia, Indonesia, Malaysia.

2 *Tagasta* gui sp. nov. (Figs. 1 – 6)

Type materials: Holotype ♂, Taiwan: Hsinchu Peipu, 24°42′ N, 121°03′ E, 1-Sept.-2007, Shi-Hong Gu (MHU). Paratypes: 1 ♂, 2 ♀, with same data as holotype.

Descriptions: Male (Figs. 1, 3 – 6). Body small, spindle-shaped. Head short conical, shorter than pronotum, with round white particles behind the eye. Length of vertex longer than its width near the fore margin of eyes, fastigial furrow present. Frons distinctly sloping backward, making acute angle with vertex. Frontal ridge lower, with narrow longitudinal sulcus entirely. Eyes long oval, longitudinal diameter about 1. 3 times as long as horizontal diameter. Antennae filiform, 20 segmented, placed before lateral ocellus, reaching posterior margin of pronotum, length of basal segment shorter than width. Median carina of pronotum distinct in prozona and indistinct in metazona, lateral carinae absent, the length of prozona about 1. 6 times as long as the length of metazona, anterior margin of pronotum straight, posterior margin of pronotum arcuate, posterior-lower angle of lateral lobe of pronotum right angulated, without white granulars on the fore half of lower margin. Prosternal process often round at anterior margin. Interspace of mesosternal lobes nearly tetragonal, length larger than maximum width. Tegmina reaching the base of epiproct. Wings shorter than tegmina, outer margin undulate. Hind femur slender, its length 5. 2 times its width, median keel of hind femur on the upper side smooth, upper basal lobe of hind femur longer than the lower one slightly, tip of lower kneelobe rounded. Posterior tibiae with 9 – 12 spines on inner side and 9 – 10 spines on outer side, including inner and outer apical spine, inner apical spine longer than outer one. Arolium larger almost reaching the apex of claw. Tympanal organ developed, tympanic cavity ellipse. Epiproct long, triangular, with median longitudinal sulcus entirely. Cercus pyramidal, basal part thickened. Subgenital plate short, rounded at end.

Female (Fig. 2). Larger than male in size. Eyes long oval, longitudinal diameter about 1. 2 times as long as horizontal diameter. Antennae filiform, 20 segmented, reaching posterior margin of pronotum, length of middle segment 2. 6 times its width. The length of prozona about 1. 4 times as long as the length of metazoan. Maximum width of interspace of mesosternal lobes about 2 times its length. Tegmina extending beyond the end of abdomen slightly. Posterior tibiae with 11 spines on inner side and 9 spines on outer side. Cercus pyramidal. Ovipositor valve hooked at apex, sharp, outer margin of valves smooth.

Body green. Eyes brown. Antennae blue. Head with white round particles behind the eye. Tegmina green. Wings rosy, apical part light dark. Fore and median legs yellowish-green. Hind femur yellowish-green, lower kneelobe without black spot on the inner side. Hind tibiae blue. Hind tarsi baby pink.

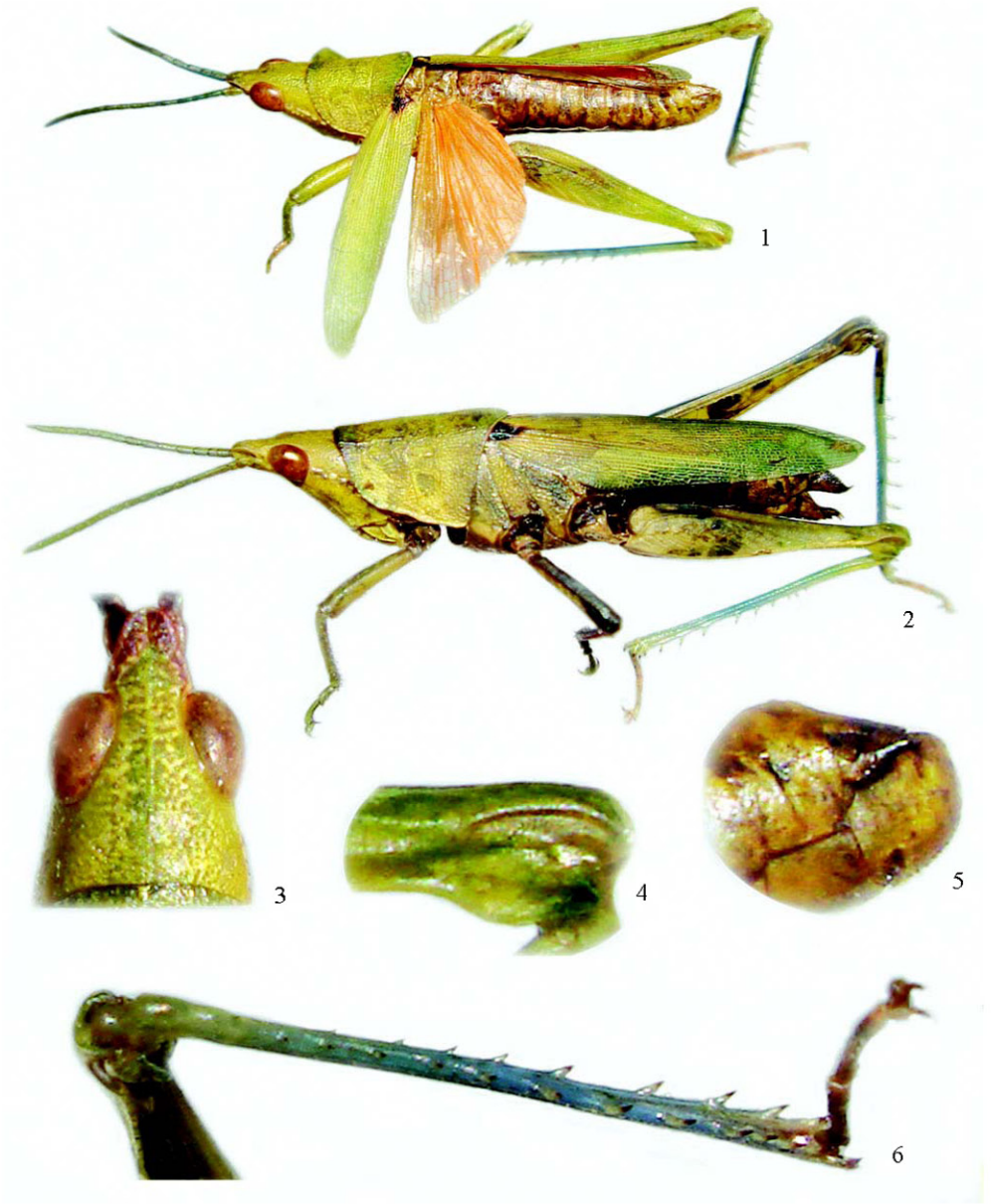
Measurements: Length of body: male 20. 2 – 24. 8 mm, female 27. 5 – 27. 9 mm; Length of tegmina: male 10. 9 – 13. 5 mm, female 18. 1 – 20. 7 mm; Length of hind femur: male 11. 7 – 13. 0 mm, female 14. 3 – 14. 5 mm.

Diagnosis: The new species is similar to *T. marginella* (Thunberg, 1815), but it differs from the latter in three characters (Table 1).

Table 1 Comparison of *Tagasta gui* sp. nov. and the similar species *T. marginella* (Thunberg, 1815)

	Tagasta gui sp. nov.	*T. marginella* (Thunberg, 1815)
Tegmina	Short, only reaching the base of epiproct in male	Long, extending over the end of abdomen in male
Pronotum	Lateral lobe without white lower margin	Lateral lobe with white lower margin
Hind tarsi	Baby pink	Not baby pink

Etymology: The specific epithet is derived from the last name of Prof. Shi-Hong Gu for his collecting the type specimens.



Figs. 1–6 Photographs of *Tagasta gui* sp. nov.
1: Male, lateral view; 2: Female, lateral view; 3: Male, head dorsal view; 4: Male knee of hind femur lateral view; 5: Male, subgenital plate, lateral view; 6: Male, hind tibia.

3 *Tagasta indica* Bolivar, 1905

Tagasta indica Bolivar, 1905, *Bol. Soc. Esp. Hist. Nat.*, v. pp. 112, 113. n. 7; Kirby, 1910, A Synonymic Catalogue Orth. III, p. 331; Fu *et al.*, 1988, *J. Shaanxi Norm. Univ. Nat, Sci. Ed.*, 16(Suppl.): 43–48.

Tagasta indica mutata Rehn, 1953, *Trans. Amer. Ent. Soc.*, 79: 138, figs.

Distribution: China (Fujian, Guangdong, Guangxi, Yunnan, Xizang); India, Burma, Thailand, Nepal, Bhutan, Viet Nam.

4 *Tagasta yunnana* Bi, 1982–1983

Tagasta yunnana Bi, 1982–1983, *Contr. Shanghai Inst. Entomol.*, 3: 176, fig'd. [English p. 179].

Distribution: China: Yunnan (Mengla, Menglun).

5 *Tagasta brachyptera* Liang, 1988

Tagasta brachyptera Liang, 1988, *Entomotaxonomia*, 10: 293, fig'd. [English p. 296].

Distribution: China: Yunnan (Yuanyang).

6 *Tagasta tonkinensis* Bolivar, 1905

Tagasta tonkinensis Bolivar, 1905, *Bol. Soc. Esp. Hist. Nat.*, v. pp. 113, 114.

Distribution: China (Fujian, Guangdong, Guangxi); Viet Nam.

7 *Tagasta ruformaculata* Bi, 1983

Tagasta ruformaculata Bi, 1983, *Contr. Shanghai Inst. Entomol.*, 3: 177 – 178, figs. 5 – 6.

Distribution: China: Guangxi (Guanyang).

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中国橄蝗属的分类研究
(直翅目:蝗亚目:蝗总科)

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摘要: 本文对中国橄蝗属 *Tagasta* Bolivar, 1905 进行了系统的分类研究, 该属同似橄蝗属 *Pseudomorphacris* Carl, 1916 近似, 其不同之处为前胸背板侧片后下角近乎直角, 后翅为红色或玫瑰色, 雄性尾须短而直, 不向上弯曲。本文共记述产于中国的橄蝗属 7 种, 包括 1 新种。并附该属中国已知 7 种的检索表。

关键词: 直翅目; 蝗总科; 瘤锥蝗科; 橄蝗属; 分类; 新种; 中国

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附录:新种中文简记

顾氏橄蝗, 新种 *Tagasta gui* sp. nov. (图 1~6)

该新种同 *T. marginella* (Thunberg,1815)近似, 其区别特征为:雄性前翅较短, 仅达肛上板基部; 前胸背板侧叶下缘缺白色边缘; 后足附节粉红色。

体长:♂ 20.2~24.8 mm, ♀27.5~27.9 mm; 前翅长:♂ 10.9~13.5 mm, ♀18.1~20.7 mm; 后足股节长:♂ 11.7~13.0 mm, ♀14.3~14.5 mm。

正模 ♂, 副模 1♂, 2♀, 台湾, 新竹, 北埔(24°42′ N, 121°03′ E), 2007-09-01, 顾世红采。

词源:种名以模式标本采集者顾世红教授的姓为名, 以示谢意。

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